

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Currently Amended) A method for performing photoacoustic spectroscopy (PAS) of a sample, the method comprising:
 - (a) providing a light source configured to introduce light having at least one wavelength into the sample such that at least one molecule within the sample is stimulated, generating an acoustic signal;
 - (b) accumulating the acoustic signal in a resonant acoustic detector; and
 - (c) displaying an output signal indicative of the acoustic signal, wherein the acoustic detector is a tuning fork and wherein the light passes between tines of the tuning fork.
2. (Original) The method according to claim 1 wherein the wavelength of the light in step (a) is selected such that the molecule resonates at the wavelength.
3. (Original) The method according to claim 1 wherein the light provided in step (a) is modulated at a resonant acoustic frequency f .
4. (Original) The method according to claim 3 wherein the acoustic detector resonates at the resonant acoustic frequency f .
5. (Original) The method according to claim 4 wherein the acoustic detector accumulates the acoustic signals during a predetermined number of oscillation periods Q .
6. (Original) The method according to claim 5 wherein Q and f are related by the equation $t = Q/f$, with t being the time it takes the acoustic detector to accumulate one acoustic signal.
7. (Original) The method according to claim 6 wherein Q is less than 8,000.

8. (Original) The method according to claim 1, further including the step of converting said acoustic signal to an electric signal and amplifying at least one of the signals, prior to step (c).

9. (Original) The method according to claim 1 wherein the light source is a laser.

10. (Original) The method according to claim 1 wherein the acoustic detector comprises a low-loss crystal material shaped into a resonant element.

11. (Currently Amended) The method according to ~~claim 9-claim 10~~ wherein the material is piezoelectric quartz.

12. (Canceled)

13. (Currently Amended) A photoacoustic spectroscopy (PAS) system for detecting an acoustic signal, the system comprising a light source and an acoustic detector, wherein the acoustic detector accumulates at least one resonant acoustic signal and emits an electrical signal corresponding to the acoustic signal, wherein the acoustic detector is a tuning fork and wherein light from the light source passes between tines of the tuning fork.

14. (Original) The system according to claim 13 further comprising a preamplifier connected to the acoustic detector, wherein the preamplifier amplifies at least one of the signals.

15. (Canceled)